

Plasmid Backbone

FIGURE 2A

#### FIGURE 2B

pDG2: GTTAACTACGTCAGGTGGCACTTTTCGGGGAAATGTGCGCGGAACCCCTATTTGTTTATTTTTCTAAATACATTCAAATA TGTATCCGCTCATGAGACAATAACCCTGATAAATGCTTCAATAATATTTGAAAAAGGAAGAGTATGAGTATTCAACATTTC CGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGA TGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCC CCGAAGAACGTTCTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTGTTGACGCCGGGCAA GAGCAACTCGGTCGCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGA TCGGAGGACCGAAGGAGCTAACCGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAG CTGAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAACGTTGCGCAAACTATTAAC GCTCGGCCCTTCCGGCTGGTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCA CTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAACTATGGATGAACGAAATAG ACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAACTGTCAGACCAAGTTTACTCATATATACTTTAGATTG ATTTACCCCGGTTGATAATCAGAAAAGCCCCCAAAAACAGGAAGATTGTATAAGCAAATATTTAAATTGTAAACGTTAATA TTTTGTTAAAATTCGCGTTAAATTTTTGTTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAAAATCCCTTAT AAATCAAAAGAATAGCCCGAGATAGGGTTGAGTGTTCTTCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTC CAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCAAATCAAGTTTTTTGGGGT CGAGGTGCCGTAAAGCACTAAATCGGAACCCTAAAGGGAGCCCCCGATTTAGAGCTTGACGGGGAAAGCGAACGTGGCGA GAAAGGAAGGAAGAAAGCGAAAGGAGCGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTGCGCGTAACCACCACA CCCGCCGCGCTTAATGCGCCGCTACAGGGCGCGTAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAA TCCCTTAACGTGAGTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTT TCTTTTTCCGAAGGTAACTGGCTTCAGCAGAGCGCAGATACCAAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACC ACTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCCCAGTGGCGATAAG TCGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGGCTGAACGGGGGGTTCGTGCAC ACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCG AAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAAC GCCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGGGCG GAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTAATGTG AGTTAGCTCACTCATTAGGCACCCCAGGCTTTACACTTTATGCTTCCGGCTCGTATGTTGTGTGGGAATTGTGAGCGGATA ACAATTTCACACAGGAAACAGCTATGACCATGATTACGCCAAGCTACGTAATACGACTCACTAGGCGGCCGCGTTTAAAC AATGTGCTCCTCTTTGGCTTGCTTCCGCGGGCCAAGCCAGACAAGAACCAGTTGACGTCAAGCTTCCCGGGACGCGTGCT  ${\tt AGCGGCGCGCGAATTCCTGCAGGATTCGAGGGCCCCTGCAGGTCAATTCTACCGGGTAGGGGAGGCGCTTTTCCCAAGG}$ TCCACCGGTAGCGCCAACCGGCTCCGTTCTTTGGTGGCCCCTTCGCGCCACCTTCTACTCCTCCCCTAGTCAGGAAGTTC  ${\tt CACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTTCGCTTTCTGGGCTCAGA}$ CAATATGGGATCGGCCATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATG ACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTC TTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCC TGTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCT TGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGATG ATCTCGTCGTGACCCATGCCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCGACTGT GGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATG GGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGT TCTTCTGAGGGGATCGATCCGTCCTGTAAGTCTGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGG **AAGTTTTTCCTGTCATACTTTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGG** GTGGGGGTGGGTTAGATAAATGCCTGCTCTTTACTGAAGGCTCTTTACTATTGCTTTATGATAATGTTTCATAG TTGGATATCATAATTTAAACAAGCAAAACCAAATTAAGGGCCAGCTCATTCCTCCCACTCATGATCTATAGATCTATAGA  ${\tt TCTCTCGTGGGATCATTGTTTTTCTCTTGATTCCCACTTTGTGGTTCTAAGTACTGTGGTTTCCAAATGTGTCAGTTTCA}$ TAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTCTCAGTATTGTTTTGCCAAGTTCTAATTCCAT  ${\tt CAGAAGCTGACTCTAGATCTGGATCCGGCCAGCTAGGCCGTCGACCTCGAGTGATCAGGTACCAAGGTCCTCGCTCTGTG}$ TATTACGGACTGGCCGTCGTTTTACAACGTCGTGACTGGGAAAACCCTGGCGTTACCCAACTTAATCGCCTTGCAGCACA TCCCCCTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCG 

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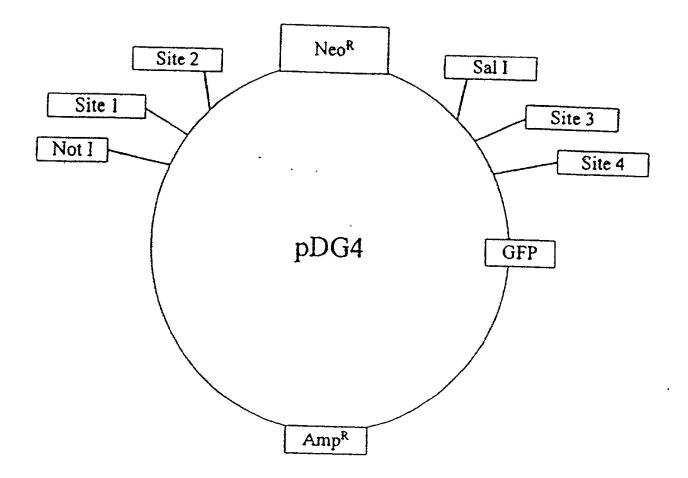


FIGURE 3A

LQ.

#### FIGURE 3B

pDG4: GTTTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGGTAAATGG CCCGCCTGGCTGACCGCCCAACGACCCCCCCCCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGA CTTTCCAATGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGT ACGCCCCTATTGACGTCAATGACGGAAAATGGCCCGCCTGGCATTAAGCCCAGTACATGACCTTATGGGACTTTCCTAC TTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGCAGTACATCAATGGGCGTGGATAGC TTTCCAAAATGTCGTAACAACTCCGCCCCATTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAG AGCTGGTTTAGTGAACCGTCAGATCCGCTAGCGCTACCGGTCGCCACCATGGTGAGCAAGGGCGAGGAGCTGTTCACCGG GGTGGTGCCCATCCTGGTCGAGCTGGACGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATG CCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCCACCCTCGTGACCACC CTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGA AGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCG ACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTAC AACTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAA CATCGAGGACGGCAGCGTGCAGCCACCACCACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTGCCCG ACAACCACTACCTGAGGACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTC GTGACCGCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTCCGGACTCAGATCCACCGGATCTAGATAACTGAT CATAATCAGCCATACCACATTTGTAGAGGTTTTACTTGCTTTAAAAAACCTCCCACACCTCCCCTGAACCTGAAACATA AAATGAATGCAATTGTTGTTGTTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTC ACABATABAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTCCABACTCATCAATGTATCTTAACGCGAACTACGTCA GGTGGCACTTTTCGGGGAAATGTGCGCGGAACCCCTATTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCAT GAGACAATAACCCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTCGCCCTTA TTCCCTTTTTTGCGGCATTTTGCCTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGATGCTGAAGATCAG TTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAACGTTC TCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTGTTGACGCCGGGCAAGAGCAACTCGGTC GCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGCATGACAGTA TACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAACGTTGCGCAAACTATTAACTGGCGAACTACTT ACTCTAGCTTCCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCC GGCTGGCTGGTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGCCAGATG ·GTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAACTATGGATGAACGAAATAGACAGATCGCTGAG GATAATCAGAAAAGCCCCCAAAAACAGGAAGATTGTATAAGCAAATATTTAAATTGTAAACGTTAATAATTTGTTAAAATT CGCGTTAAATTTTTGTTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAAAATCCCTTATAAATCAAAAGAAT AGCCCGAGATAGGGTTGAGTGTTGCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGG CGAAAAACCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCAAATCAAGTTTTTTGGGGTCGAGGTGCCGTAA GAAAGCGAAAGGAGCGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTA ATGCGCCGCTACAGGGCGCGTAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA GTAACTGGCTTCAGCAGAGCGCAGATACCAAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTC TGTAGCACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTTACCG GGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGCGGTCGGGCTGAACGGGGGGTTCGTGCACACAGCCCAGCTTG GAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGC GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAACGCCTGGTATCTTT AACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGCCTTTTGCTCACATGTAATGTGAGTTAGCTCACTC ATTAGGCACCCCAGGCTTTACACTTTATGCTTCCGGCTCGTATGTTGTGGGAATTGTGAGCGGATAACAATTTCACACA GGAAACAGCTATGACCATGATTACGCCAAGCTACGTAATACGACTCACTAGGCGGCCGCGTTTAAACAATGTGCTCCTCT TTGGCTTGCTTCCGCGGGCCAAGCCAGACAAGAACCAGTTGACGTCAAGCTTCCCGGGACGCGTGCTAGCGGCGCGCGA ATTCCTGCAGGATTCGAGGGCCCCTGCAGGTCAATTCTACCGGGTAGGGGAGGCGCTTTTCCCAAGGCAGTCTGGAGCAT GCGCTTTAGCAGCCCCGCTGGCACTTGGCGCTACACAAGTGGCCTCTGGCCTCGCACACATTCCACATCCACCGGTAGCG CCAACCGGCTCCGTTCTTTGGTGGCCCCTTCGCGCCACCTTCTACTCCTCCCCTAGTCAGGAAGTTCCCCCCCGCCCCGC AGCTCGCGTCGTGCAGGACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGACAGCACCGCTGAGCAA TGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGGCGCGGAAGGTCCTCCCGAGGCCCGGCATTCTCGCAC GCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCCTCATCTCCGGGCCTTTCGACCTGCAGCCAATATGGGATCG GCCATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACA  $\tt CTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCT$ 

TGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCG ACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTCGATCAGGATGATCTGGACGAA GAGCATCAGGGGCTCGCCCAGCCGAACTGTTCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGATGATCTCGTCGTGAC CCATGGCGATGCCTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCGACTGTGGCCGGCTGGGTG TGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTC  $\tt CTCGTGCTTTACGGTATCGCCGCTCCCGATTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGGA$ TCGATCCGTCCTGTAAGTCTGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGT CATACTTTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGGGTGGGGGT GGGATTAGATAAATGCCTGCTCTTTACTGAAGGCTCTTTACTATTGCTTTATGATAATGTTTCATAGTTGGATATCATAA TTTAAACAAGCAAAACCAAATTAAGGGCCAGCTCATTCCTCCCACTCATGATCTATAGATCTATAGATCTCTCGTGGGAT CATTGTTTTTCTCTTGATTCCCACTTTGTGGTTCTAAGTACTGTGGTTTCCAAATGTGTCAGTTTCATAGCCTGAAGAAC GAGATCAGCAGCCTCTGTTCCACATACACTTCATTCTCAGTATTGTTTTGCCAAGTTCTAATTCCATCAGAAGCTGACTC TAGATCTGGATCCGGCCAGCTAGGCCGTCGACCTCGAGTGATCAGGTACCAAGGTCCTCGCTCTGTGTCCGTTGAGCTCG ACGACACAGGACACGCAAATTAATTAAGGCCGGCCCGTACCCTCTAGTCAAGGCCTTAAGTGAGTCGTATTACGGACTGG CCGTCGTTTTACAACGTCGTGACTGGGAAAAECCTGGCGTTACCCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCC AGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTCGC TTGGTAATAAAGCCCGCTTCGGCGGGCTTTTTTTT

FIGURE 3B (Continuted)

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FIGURE 4

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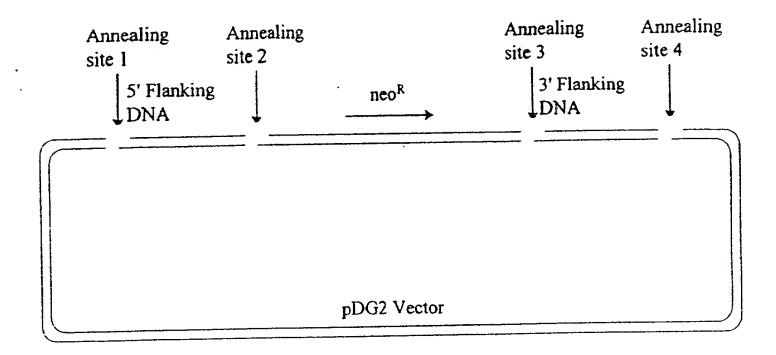
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3		AAggtcctcgctctgtgtccgttGAGCT Ttccaqqaqcgagacacaggcaac	3.4	AA Ttccaggagcgagacacaggcaac	
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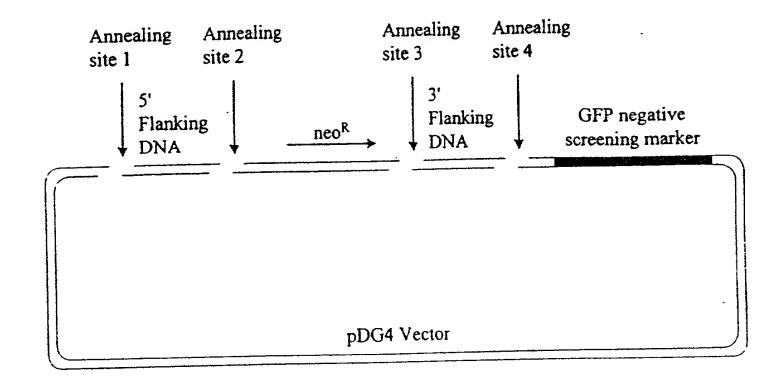
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FIGURE 5

# FIGURE 6



# FIGURE 7



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GAATTCCAACCTCAGCTTGACGTGGGGCCTATTGAACTCAATTTGCTTGGAAACTGCCCAGGAAAGGCTG AGAGCTGAACCCCCTCCTTGGGACAGCTAAAGGGAGTCTTCACCATGGGTGAGGTGACAGCAGAGGAGGT AGAAAAGTTCCTGGATTCAAATATTGGCTTTGCCAAACAATACTATAACCTTCACTACCGGGGGAAGGTC ATCTCAGACCTCCTCGGGGCCAAGGAGGCAGCTGTGGACTTCAGCAACTACCACGATGTGAACAGCGTAG AGGAGAGTGAGATCATCTTTGACCTCCTGCGGGACGTTCAGGAGAACTTACAGGCTGAGAAATGCACATT CAATGTCATGAAGAAGCTCTGCTTCCTCCTGCGGGCTGACCGAGTGAGCCTGTTCATGTACAGGACCCGC AACGGCATCGCCGAGCTGGCCACTAGGCTCTTCAATGTCCACAAGGATGCTGTGCTAGAGGACTGCTTGG TGATGCCCGACTCCGAGATTGTCTTCCCTCTGGACATGGGTGTCGTGGGCCACGTCGCACACTCCAAAAA GATTGCCAATGTCCCCAACACAGAAGAGGATGAGCATTTCTGTGACTTCGTGGACAATCTCACAGAATAT CAGACCAAGAACATCCTGGCTTCCCCCATCATGAATGGGAAGGATGTGGTAGCCATAATCATGGCTGTGA ATAAAATAGATGAACCCCACTTCACCAAGAGAGAGATGAAGAGATTCTTCTCAAGTACCTCAACTTTGTGAA CCTGATCATGAAGGTATTCCACCTGAGCTACCTGCACAACTGTGAGACTCGTCGCGGCCAGATATTGCTG TGGTCTGGGAGCAAGGTCTTTGAGGAGCTCACGGATATAGAGAGGCAGTTCCACAAGGCCCTGTACACGG TCCGGGCTTTCCTCAACTGTGACAGATACTCCGTAGGACTCTTAGACATGACCAAACAGAAGGAATTTTT TGATGTGTGGCCAGTTCTGATGGGCGAGGCTCCAGCTTACTCTGGTCCCAGGACTCCAGACGGAAGGGAA ATTAACTTCTACAAGGTCATTGACTACATCCTGCACGGCAAAGAAGACATCAAAGTCATCCCGAACCCAC CCGCTGACCACTGGGCTCTAGTGAGTGGTCTACCCCCCTTACGTGGCTCAAAATGGTCTGATCTGCAATAT AATGAATGCGCCTGCAGAGGACTTTTTTGAATTCCAGAAAGAGCCTCTGGATGAGTCTGGGTGGATGATT GCAAAGATGGGAAGCCCTTCGACGATATGGACGAGACCCTCATGGAGTCTTTGACTCAGTTTCTGGGATG ATCGTGAAATATCACGTGAAGTGTGATAACGAAGAATCCAGAAGATCTTGAAAACCAGAGAGGTGTACG GCAAAGAGCCGTGGGAATGCGAGGAGGAGGAGCTGGCTGAGATCCTGCAAAGAGAACTTCCAGACGCGGA GTCATACGAAATCAACAAGTTCCACTTCAGCGACCTGCCACTCACGGAGCTGGAGCTGGTGAAGTGCGGC ATCCAGATGTACTACGAGCTCAGAGTGTGGGACAAGTTCCACATCCCGCAAGAGGCCCTGGTGCGCTTCA TGTATTCGCTAAGCAAAGGCTACCGGAGAATCACTTACCACAACTGGCGGCATGGCTTCAACGTGGGGCA GACCATGTTCTCCTTGCTGGTGACAGGAAAGCTGAAACGGTACTTCACTGATCTAGAGGCCTTGGCCATG GTCACTGCTGCCTTCTGTCATGACATCGACCACAGAGGCACGAACAACCTCTACCAGATGAAATCACAGA ACCCCCTGGCCAAGCTCCATGGGTCCTCCATCTTGGAAAGGCATCATTTGGAGTTTGGCAAAACACTCCT GAGAGATGAGAGCCTGAATATCTTCCAGAACCTGAATCGCCGGCAGCATGAGCACGCGATCCACATGATG GACATCGCGATCATTGCCACAGACCTTGCCTTGTATTTCAAGAAAAGGACCATGTTCCAGAAGATTGTGG ATCAGTCAAAGACATATGAGAGTACCCAGGAGTGGACCCAGTACATGATGCTGGAGCAGACACGGAAGGA AATTGTGATGGCCATGATGATGACCGCCTGTGATCTCTCAGCCATCACCAAACCCTGGGAGGTACAGAGC AAGGTGGCTCTGCTGGCTGCTGAATTCTGGGAGCAAGGTGACCTGGAGCGCACAGTGCTGCAGCAGA ATCCCATTCCCATGATGGACAGAAACAAGGCGGATGAGCTCCCCAAGCTTCA AGTCGGCTTCATCGACTTTGTGTGCACTTTTGTCTATAAGGAGTTCTCCCGATTTCATGAGGAGATTACA AGGGAACCCACTCCAGGGTGCACCTGCATCTAAGTCCTGTTGCATCCAGTAGCTGACTGCACTGCAGCAG GGCACAGCCCTCAGGAAGGAGGAGGTCACCCTGGCACTGGACAGTTAAAGAACCAGGAGCTTGGAAGTGG TGGCAAACACAGCAGCATCTATATCATCAAATGGTCTTAGACATTGGTTCTGTTCTGTTCTGTTCTGTT 

Figure 8A

ACAGAATTATACGGAATTC (SEQ ID NO:19 )

FAG. NOA

## Targeting Vector (5' arm; 200 bp flanking neo insert):

GGAGGTAGAAAAGTTCCTGGATTCAAATATTGGCTTTGCCAAACAGTACTATAACTTTCACTA CCGGGGGAAGGTCATCTCAGACCTCCTCGGGGCCAAGGAGGCAGCCGTGGACTTCAGCAA CTACCACGATGTGAACAGCGTAGAGGAGGAGGTGAGATCATCTTTGACCTCCTGCGGGACGTT CAGGAGAACTTACAGG (SEQ ID NO:20)

## Targeting Vector (3' arm; 200 bp flanking neo insert):

TGTCGTGGGCCACGTCGCACACTCCAAAAAGATTGCCAATGTCCCCAACACAGAAGAGGTACG CTCTCCCCATAAGATGGATGTACGAATGCACTGTTCCCTGGGGTTCTGGAGTCCAAGCTGGCT GGGCTGTTGCTGGCCACCAAACCTGGGCTAGTCATAGCACGATACCACTCTCTATTTATAAAAA ATACTTAGAA (SEQ ID NO: 21)